



PATENT ABSTRACTS OF JAPAN

(11) Publication number: 05284765 A

(43) Date of publication of application: 29.10.1993

(51) Int. Cl. H02N 10/00
G11B 9/00
// H01L 29/84

(21) Application number: 04103796
(22) Date of filing: 31.03.1992

(71) Applicant: CANON INC
(72) Inventor: NAKAYAMA MASARU
TAKAMATSU OSAMU
SHIMADA YASUHIRO
YAMAMOTO KEISUKE
SHINJO KATSUHIKO

(54) CANTILEVER TYPE DISPLACEMENT
ELEMENT, CANTILEVER TYPE PROBE USING
THE SAME, SCAN TYPE TUNNEL
MICROSCOPE USING THE SAME PROBE
AND INFORMATION PROCESSOR

(57) Abstract:

PURPOSE: To improve productivity, reproducibility of a cantilever type probe by forming a displacement element of one nonconductive element layer and a plurality of heat generator layers, and forming a cantilever type displacement element to be displaced by a thermal drive of the generator layer.

CONSTITUTION: A cantilever fixed at one end to an Si substrate 1 is formed of a support 2 made of non-doped polysilicon and heat generator layers 3, 3', 4, 4'. The generator layer is made of doped polysilicon with p-type or n-type conductivity. Further, a probe 5 for sensing a tunnel current and an electrode 6 for outputting its current are formed on the cantilever. Since the support 2 of the cantilever is partly expanded and contracted in an X-axis direction under the control of

currents of the layers 3, 3', 4, 4', it can be driven in X-, Y- and Z-axes. It can be moved in the X-axis direction by supplying the same currents to the entire generator layers. It is moved in the Y-axis direction by supplying the currents only to the layers 3, 4. It can be driven in the Z-axis direction by supplying the currents only to the layers 3, 3'.

COPYRIGHT: (C)1993,JPO&Japio

